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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,043	02/28/2002	S. Mark Haugland	H052722.0029US0	8887

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EXAMINER

ORTIZ RODRIGUEZ, CARLOS R

ART UNIT PAPER NUMBER

2125

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/086,043

Applicant(s)

HAUGLAND, S. MARK

Examiner

Carlos Ortiz-Rodriguez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/7/02, 2/28/02, 1/30/03 + 10/29/03 + 11/18/03 + 2/11/04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clark et al. U.S Patent No. 4,968,940 in view of Meyer, Jr. et al. U.S. Patent No. 5,892,361.

Regarding claims 1, 5-7, 13 and 21-22 Clark et al. discloses a method of estimating properties of an earth formation, comprising the steps of: evaluating a model to generate predicted values for a plurality of electrical signals measured in a borehole in the earth formation as a function of a first set of model electrical parameters, a second set of model electrical parameters, and model spatial coordinates of boundaries between regions of the earth formation (C6 L54-67, C12 L61-64 and C20 L59-63).

But Clark et al. fails to clearly specify details regarding the transformation model and correlating a first set of earth formation electrical parameters with the first set of model electrical parameters

However, Clark et al. in combination with Meyer, Jr. et al. disclose transforming the plurality of electrical signals to produce transformed electrical signals ; transforming the model

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values for the plurality of electrical signals to produce transformed model values; whereby, the transformed electrical signals are approximately equal to the transformed model values; and correlating a first set of earth formation electrical parameters with the first set of model electrical parameters (Meyer, Jr. et al. C5 L1-57).

Therefore at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the above invention suggested by Clark et al. and combining it with the invention disclosed by Meyer, Jr. et al.. The results of this combination would lead to method of determination resistivity and/or dielectric values of an earth formation as a function of position within the earth formation.

One of ordinary skill in the art would have been motivated to do this modification in order to reduce discrepancies between data as suggested by Meyer, Jr. et al.

Regarding claims 2-4, 11-12, and 27-29 Clark et al. in combination with Meyer, Jr. et al. disclose, wherein the step of transforming the plurality of electrical signals comprises an identity transformation whereby the transformed electrical signals are equal to the measured electrical signals and wherein the step of transforming the model values comprises an identity transformation whereby the transformed model values are equal to the model values (Meyer, Jr. et al. C5 L8-67 and C6 L1-57).

Regarding claims 8 and 23, Clark et al. in combination with Meyer, Jr. et al. disclose correlating a set of spatial coordinates for boundaries between regions of the earth formation

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with the model spatial coordinates (Clark et al. C11 L1-11).

Regarding claim 9 and 24, Clark et al. in combination with Meyer, Jr. et al. disclose, wherein the first set of model electrical parameters is a set of conductivity values and the second set of model electrical parameters is a set of dielectric constant values (Clark et al. C14 L 47-67).

Regarding claims 10 and 25, Clark et al. in combination with Meyer, Jr. et al. disclose, wherein the model is a function of conductivity values associated with an invaded region of the earth formation, dielectric constant values associated with the invaded region of the earth formation, conductivity values associated with a virgin region of the earth formation, dielectric constant values associated with the virgin region of the earth formation, and a radius of the invaded region of the earth formation (Clark et al. C13 L 55-67 and C14 L 1-19).

Regarding claims 14-15, and 26, Clark et al. in combination with Meyer, Jr. et al. disclose, wherein the transformed electrical signals and the transformed model values are relatively sensitive to the first set of model electrical parameters and relatively insensitive to the second set of model electrical parameters (Clark et al. C12 L40-45).

Regarding claims 16, Clark et al. in combination with Meyer, Jr. et al. disclose, wherein the transformed electrical signals and the transformed model values represent attenuation resistivity values (Clark et al. C12 L40-45).

Regarding claims 17 and 20, Clark et al. in combination with Meyer, Jr. et al. disclose, wherein the transformed electrical signals are consistent with hypothetical electrical signals that would be measured by a hypothetical measurement device simpler than an actual measurement device that was used to measure the plurality of electrical signals (Clark et al. C13 L3-55).

Regarding claims 18 and 19, Clark et al. in combination with Meyer, Jr. et al. disclose, wherein the step of transforming the plurality of electrical signals comprises the steps of: generating a plurality of lookup tables, each table containing a first set of values representative of each electrical signal of the plurality of electrical signals and a second set of values representative of each transformed electrical signal of the plurality of transformed electrical signals as a function of at least one electrical parameter; and determining an estimate of the value of each transformed electrical signal with one or more lookup tables (Clark et al. C13 L3-55 and C14 L33-46).

Citation of Pertinent Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to further show the state of the art with respect to method of determination resistivity and/or dielectric values of an earth formation as a function of position within the earth formation:

- a. U.S. Pat. No. 5,144,245 to Wisler, which discloses method for evaluating a borehole formation based on a formation resistivity log generated by a wave propagation formation evaluation tool.

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b. U.S. Pat. No. 6,430,509 to Yin et al., which discloses method for 2D inversion of dual laterlog measurements.

c. U.S. Pat. No. 6,591,195 to Haugland, which discloses method of and apparatus for independently determining the resistivity and/or dielectric constant of an earth formation.

d. U.S. Pat. No. 6,618,676 to Kriegshauser et al., which discloses efficient and accurate pseudo 2-D inversion scheme for multicomponent induction log data.

e. U.S. Pat. No. 6,631,328 to Haugland, which discloses method of determining resistivity of an earth formation with phase resistivity evaluation based on a phase shift measurement and attenuation resistivity evaluation based on an attenuation measurement and the phase shift measurement.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Ortiz-Rodriguez whose telephone number is (571) 272-3747. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (571) 272-3749. The central official fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the general information number at 800-786-9199.

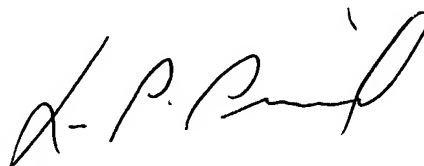
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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Carlos Ortiz-Rodriguez
Patent Examiner
Art Unit 2125

cror

September 6, 2005



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